Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Withdrawn) An automotive lane deviation prevention (LDP) apparatus comprising:

a processor programmed to perform the following,

(a) detecting a lane marking line on a driving lane of a host vehicle, based on a picture image in front of the host vehicle;

(b) determining, based on a detection result regarding the lane marking line, whether the host vehicle is in a first state where there is an increased tendency for the host vehicle to deviate from the driving lane or in a second state where there is a less tendency for the host vehicle to deviate from the driving lane;

(c) executing LDP control by which the host vehicle's lane deviation tendency is avoided, when the host vehicle is in the first state;

(d) determining whether the host vehicle is in a third state where the host vehicle is traveling on predetermined irregularities formed on or close to the lane marking line, in a lane-marking non-detecting state where the lane marking line is out of an image pick-up enabling area; and

(e) executing, based on a detection result regarding whether the host vehicle is in the third state and the detection result regarding the lane marking line, vehicle yawing motion control by which the host vehicle returns to a central position of the driving lane, in the lane-marking non-detecting state.

2. (Currently Amended) An automotive lane deviation prevention (LDP) apparatus comprising:

a lane marking detector configured to detect a lane marking line on a driving lane of a host vehicle, based on a picture image in front of the host vehicle;

an actuator capable of variably adjusting a yawing motion of the host vehicle;

a control unit configured to be electronically connected to the lane marking detector and the actuator, and to control vehicle yawing motion and LDP; the control unit comprising:

(a) a lane-deviation tendency detection section configured to determine, based on a detection result regarding the lane marking line, whether the host vehicle is in a first state or a second state, wherein the first state has a stronger tendency for the host vehicle to deviate from the driving lane than the second state;

(b) an LDP control section configured to execute the LDP control by which the host vehicle's lane deviation tendency is avoided when the host vehicle is in the first state;

(c) a road-surface irregularities detection section configured to determine whether the host vehicle is in a third state where the host vehicle is traveling on predetermined irregularities formed on or close to the lane marking line; and

(d) a vehicle yawing motion control section configured to execute yawing motion control by which the host vehicle returns to the driving lane, based on a detection ~~result~~ of the ~~road-surface irregularities detection section and a detection result of the lane-deviation tendency detection section, vehicle yawing motion control by which the host vehicle returns to a central position of the driving lane~~ third state in a lane-marking non-detecting state where the lane marking line cannot be recognized or detected by the lane marking detector, ~~detector; wherein the vehicle yawing motion control section is configured to initiate the vehicle yawing motion control by which the host vehicle returns to the central position of the driving lane when the host vehicle is in the second state or the third state~~ and a detection of the first state or the second state when a transition occurs from a lane-marking detecting state, in which the lane marking line is recognized or detected, to the lane-marking non-detecting state. ~~state;~~

~~wherein the control unit further comprises a lane-deviation tendency estimation section configured to estimate, based on the lane marking line detected by the lane marking detector before the transition from the lane-marking detecting state to the lane-marking non-detecting state, whether the host vehicle is in a fourth state or a fifth state, wherein the fourth state has a stronger tendency for the host vehicle to deviate from the driving lane than the fifth state;~~

~~wherein the vehicle yawing motion control section is configured to initiate the vehicle yawing motion control by which the host vehicle returns to the central position of the driving lane when the host vehicle is in the second, third or fourth state and the transition from the lane-marking detecting state to the lane-marking non-detecting state occurs.~~

3. (Currently Amended) The automotive lane deviation prevention apparatus as claimed in claim 2, wherein:

the vehicle yawing motion control section is configured to maintain a controlled variable of the LDP control at a previous value of the controlled variable for a predetermined time period [[when]] based on the detection of the ~~host vehicle is in the~~ first state ~~or the third state and a~~ when the transition occurs from [[a]] the lane-marking detecting state ~~state, in which the lane marking line is recognized or detected,~~ to the lane-marking non-detecting state.

Claims 4-5. (Cancelled)

6. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 2, further comprising:

wheel speed sensors configured to detect respective wheel speeds of road wheels of the host vehicle,

wherein the road-surface irregularities detection section is configured to determine that the host vehicle is in the third state when at least one of the wheel speeds detected by the wheel speed sensors is fluctuating at a substantially constant time period in relation to a host vehicle speed.

7. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 6, wherein:

the road-surface irregularities detection section is configured to determine that the host vehicle is in the third state only when either one of the left and right wheel speeds is fluctuating.

8. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 2, further comprising:

a vehicle-suspension up-and-down motion sensor configured to detect an up-and-down motion of a suspension of the host vehicle,

wherein the road-surface irregularities detection section is configured to determine, based on the suspension's up-and-down motion detected, whether the host vehicle is in the third state.

9. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 2, wherein:

the control unit further comprises a processor programmed to perform the following,

(1) determining whether the host vehicle is traveling within an area except road-ways; and

(2) inhibiting a check for the host vehicle traveling on the predetermined irregularities, when the host vehicle is traveling within the area except road-ways.

10. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 2, wherein:

the control unit further comprises a traveling-path condition detector configured to detect a host vehicle speed, a host vehicle's yaw angle with respect to a direction of the host vehicle's driving lane, a host vehicle's lateral displacement from a central axis of the host vehicle's driving lane, and a curvature of the host vehicle's driving lane;

the lane-deviation tendency detection section is configured to calculate a future lateral-displacement estimate based on the host vehicle speed, the yaw angle, the lateral displacement, and the curvature; and

the lane-deviation tendency detection section is configured to determine that the host vehicle is in the first state, when an absolute value of the future lateral-displacement estimate is greater than or equal to a predetermined lateral-displacement criterion.

11. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 2, wherein:

the LDP control section is configured to control a braking force of each of the road wheels so that a yaw moment is produced in a direction in which the host vehicle's lane-deviation tendency is avoided when the lane-deviation tendency detection section determines that the host vehicle is in the first state.

12. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 11, wherein:

the LDP control section is configured to calculate a braking/driving force controlled variable of each of the road wheels so that a yaw moment is produced in a direction in which the host vehicle's lane-deviation tendency is avoided when the lane-deviation tendency detection section determines that the host vehicle is in the first state; and

the LDP control section is configured to control braking/driving forces of the road wheels responsively to the braking/driving force controlled variables calculated.

13. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 12, wherein:

the LDP control section is configured to calculate, based on a difference between a future lane-displacement estimate and a predetermined lane-displacement criterion, a desired yaw moment to be exerted on the host vehicle; and

the LDP control section is configured to calculate, based on the desired yaw moment, the braking/driving force controlled variable of each of the road wheels.

14. (Withdrawn) The automotive lane deviation prevention apparatus as claimed in claim 2, wherein:

the vehicle yawing motion control section is configured to produce a steering torque in a direction in which the host vehicle returns to the central position of the driving lane when the lane-deviation tendency detection section determines that the host vehicle is in the first state.

15. (Currently Amended) An automotive lane deviation prevention (LDP) apparatus comprising:

a lane marking detection means for detecting a lane marking line on a driving lane of a host vehicle, based on a picture image in front of the host vehicle;

a yawing-motion control actuator capable of variably adjusting a yawing motion of the host vehicle;

a control unit configured to be electronically connected to the lane marking detection means and the yawing-motion control actuator for vehicle yawing motion control and LDP control purposes; the control unit comprising:

(a) lane-deviation tendency detection means for determining, based on a detection result regarding the lane marking line, whether the host vehicle is in a first state or a second state, wherein the first state has a stronger tendency for the host vehicle to deviate from the driving lane than the second state;

(b) LDP control means for executing the LDP control by which the host vehicle's lane deviation tendency is avoided when the host vehicle is in the first state;

(c) road-surface irregularities detection means for determining whether the host vehicle is in a third state where the host vehicle is traveling on predetermined irregularities formed on or close to the lane marking line; and

(d) vehicle yawing motion control means for executing yawing motion control by which the host vehicle returns to the driving lane, based on a detection ~~result~~ of the ~~road-surface irregularities detection means and a detection result of the lane-deviation tendency detection means, vehicle yawing motion control by which the host vehicle returns to a central position of the driving lane~~ third state in a lane-marking non-detecting state where the lane marking line cannot be recognized or detected by the lane marking detection means, ~~means; wherein the vehicle yawing motion control means is for initiating the vehicle yawing motion control by which the host vehicle returns to the central position of the driving lane when the host vehicle is in the second state or the third state~~ and a detection of the first state or the second state when transition occurs from a lane-marking detecting state, in which the lane marking line is recognized or detected, to the lane-marking non-detecting state. ~~state;~~

~~wherein the control unit further comprises a lane-deviation tendency estimation means for estimating, based on the lane marking line detected by the lane marking detection means before the transition from the lane-marking detecting state to the lane-marking non-detecting state, whether the host vehicle is in a fourth state or a fifth state, wherein the fourth state has a stronger tendency for the host vehicle to deviate from the driving lane than the fifth state;~~

~~wherein the vehicle yawing motion control means is for initiating the vehicle yawing motion control by which the host vehicle returns to the central position of the driving lane~~

~~when the host vehicle is in the second, third or fourth state and the transition from the lane-marking detecting state to the lane-marking non-detecting state occurs.~~

16. (Withdrawn) A method of preventing lane deviation of a host vehicle employing braking force actuators that adjust braking forces applied to respective road wheels, the method comprising:

(a) detecting a lane marking line on a driving lane of a host vehicle, based on a picture image in front of the host vehicle;

(b) determining, based on a detection result regarding the lane marking line, whether the host vehicle is in a first state where there is an increased tendency for the host vehicle to deviate from the driving lane or in a second state where there is a less tendency for the host vehicle to deviate from the driving lane;

(c) executing lane deviation prevention control by feedback-controlling the braking forces applied to the road wheels so that the host vehicle's lane deviation tendency is avoided, when the host vehicle is in the first state;

(d) determining whether the host vehicle is in a third state where the host vehicle is traveling on predetermined irregularities formed on or close to the lane marking line, in a lane-marking non-detecting state where the lane marking line is out of an image pick-up enabling area; and

(e) executing, based on a detection result regarding whether the host vehicle is in the third state and the detection result regarding the lane marking line, vehicle yawing motion control by which the host vehicle returns to a central position of the driving lane, in the lane-marking non-detecting state.

17. (Withdrawn) A method of preventing lane deviation of a host vehicle employing a steering actuator that adjusts a steering torque applied to a steering wheel, the method comprising:

(a) detecting a lane marking line on a driving lane of a host vehicle, based on a picture image in front of the host vehicle;

(b) determining, based on a detection result regarding the lane marking line, whether the host vehicle is in a first state where there is an increased tendency for the host vehicle to

deviate from the driving lane or in a second state where there is a less tendency for the host vehicle to deviate from the driving lane;

(c) executing lane deviation prevention control by feedback-controlling the steering torque applied to the steering wheel so that the host vehicle's lane deviation tendency is avoided, when the host vehicle is in the first state;

(d) determining whether the host vehicle is in a third state where the host vehicle is traveling on predetermined irregularities formed on or close to the lane marking line, in a lane-marking non-detecting state where the lane marking line is out of an image pick-up enabling area; and

(e) executing, based on a detection result regarding whether the host vehicle is in the third state and the detection result regarding the lane marking line, vehicle yawing motion control by which the host vehicle returns to a central position of the driving lane, in the lane-marking non-detecting state.